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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Robert E. Grove, et al.
Serial No.: 08/022,978
Filed : February 24, 1993
For : PULSED INFRARED LASER TREATMENT OF PSORIASIS

Examiner : A. Sykes
Art Unit : 3305

600 Atlantic Avenue
Boston, MA 02210
December 26, 1994

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The undersigned hereby certifies that this document is being sent via facsimile to Commissioner of Patents and Trademarks, Washington, DC 20231, on this 27th day of December, 1994.

Ronald J. Kransdorf, Reg. 20,004

Commissioner of Patents
and Trademarks
Washington, DC 20231

Sir:

AMENDMENT

This Amendment is being submitted in response to the final rejection mailed October 17, 1994 on the above-identified patent application.

In this office action, the Examiner has rejected claims 7-16, all of the remaining claims in this application, as being unpatentable over Tan in view of Itzkan. In particular, the Examiner is taking the position that it would have been obvious to one skilled in the art to utilize longer duration pulses as

taught by Itzkan in the Tan method to prevent the bursting of blood vessels. For the reasons discussed in the following paragraphs, the Applicants respectfully traverse this grounds of rejection.

There is no disagreement between the Examiner and the Applicants as to what is being taught in the Itzkan and Tan references. In particular, at the time of the Applicants' invention, conventional wisdom was that in order to destroy blood vessels or some other element within a person's body, the laser used for the procedure should operate at a wavelength which is preferentially absorbed by such element. This is what is being done in both Itzkan and Tan. In particular, since blood, as is shown by the Applicants' Fig. 2, absorbs significant energy at wavelengths below 600 nm, and is roughly two orders of magnitude less absorbent at higher wavelengths. Itzkan therefore teaches operating at a wavelength below 600 nm for the selective necrosis of highly-filled blood vessels, while leaving adjacent tissue and empty blood vessels undamaged. Similarly, Tan is concerned with destroying tattoos, and in particular, the paint pigment of tattoos, while achieving minimal damage to surrounding skin. Tan therefore operates at a wavelength where the tattoo pigments are highly absorbent to maximize damage to the tattoos, but where the blood vessels are not highly absorbent so as to minimize damage to surrounding skin.

There is absolutely nothing in Tan which suggests that a laser operating at the wavelengths taught in Tan could in any way be used or should be used to cause necrosis of blood-filled blood vessels, and in particular that a laser operating at such wavelength could be used to necrose deep vessels. Similarly, there is nothing in Itzkan to suggest that a laser operating above 600 nm could be utilized to necrose blood vessels at any depth and there is clearly nothing in Itzkan to suggest that

use of a laser operating in the 700 nm to 1100 nm wavelength range would be effective to cause necrosis of blood vessels at depths of up to 1 millimeter without excessive damage to surface vessels, 1 millimeter being at least twice the depth at which necrosis could be safely achieved utilizing the Itzkan technique.

Thus, while Tan teaches the use of a laser operating in the appropriate wavelengths to destroy pigmented material in the skin, but operates the laser for much shorter durations, and Itzkan teaches operating a laser for the appropriate duration, but at much lower wavelengths, for surface necrosis of blood-filled cells, there is nothing in either reference or in any other material known to Applicants which in any way suggests that a laser operating in the 700 to 1100 nm range could be utilized for the necrosis of blood vessels; and in particular, there is nothing to suggest that a laser operating in this wavelength range and having the pulse durations taught by Applicants could be used for the deep necrosis of blood vessels. Further, this technique was contrary to conventional thinking at the time which was that one had to operate below 600 nm in order to achieve significant blood vessel damage.

There is abundant case law to the effect that it is not enough merely to be able to find elements of the Applicants' invention in various references, but that there must be some suggestion, either in the references themselves or elsewhere, to combine these elements in order to achieve the results claimed by the Applicants (see for example ACS Hospital Systems, Inc. v. Montefiore Hospital, 21 U.S.P.Q. 929 at 932-933). Therefore, where, as in this case, no such suggestion exists, either in the references or anywhere else, and what is being done by the Applicants is contrary to

conventional thinking at the time the invention was made, an obviousness rejection is improper and it is respectfully requested that this rejection be withdrawn.

Should the Examiner have any remaining questions on this application, the undersigned would be pleased to discuss the application with the Examiner so that such issues may be expeditiously resolved.

Respectfully submitted,

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DATE: December 27, 1994

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